



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,493	04/20/2004	Makoto Horiuchi	5077-000213	5279
27572	7590	06/30/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			MIDKIFF, ANASTASIA	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/828,493

Applicant(s)

HORIUCHI ET AL.

Examiner

Anastasia Midkiff

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Double Patenting***

Claims 1-4, 7-12, 15-18, and 28-30 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of U.S. Patent No. 6,965,202 (Hataoka et al.; hereinafter Hataoka) in view of U.S. Patent Application Publication No. 2002/0017842 (Narita).

Re claims 1, 3, 4, and 28-30: Hataoka discloses, in claims 1 and 24, a lamp with a reflector comprising a high pressure discharge lamp including a luminous bulb with a luminous substance enclosed therein and a pair of sealing portions extending from the luminous bulb; and a reflector for reflecting light emitted from the high pressure discharge lamp, at least one of the pair of sealing portions includes a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion of the inside of the first glass portion, and both the pair of sealing portions have portions to which a compressive stress is applied.

However, Hataoka fails to teach or fairly suggest the reflector having a first opening located in a forward position of the reflector with respect to a light emission direction, the reflector is formed with a second opening into which one of the pair of sealing portions is inserted, and clearance between the one sealing portion and the second opening is substantially filled, when the pair of sealing portions are disposed to extend in the substantially horizontal direction, a portion of the reflector is formed with an air inlet for introducing an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the luminous bulb, wherein the angle at

which the air inlet passes through the reflector is tilted with respect to the vertical direction so that the air inlet introduces air flow striking against the upper portion of the luminous bulb and then coming in to the lower portion of the luminous bulb.

Narita discloses, in figure 3 and throughout the disclosure, a lamp comprising a reflector having a first opening located in a forward position of the reflector with respect to a light emission direction, the reflector is formed with a second opening into which one of the pair of sealing portions is inserted, and clearance between the one sealing portion and the second opening is substantially filled, when the pair of sealing portions are disposed to extend in the substantially horizontal direction, a portion of the reflector is formed with an air inlet, the angle at which the air inlet passes through the reflector is tilted with respect to the vertical direction so that the air inlet introduces air flow striking against the upper portion of the luminous bulb and then coming in to the lower portion of the luminous bulb, for introducing an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the luminous bulb.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lamp of Hataoka with the reflector of Narita because it reduces the amount of heat built-up within the lamp thereby avoiding premature failure of the lamp.

Re claims 2,7,8,9 and 10: Hataoka discloses in claims 13 and 21, at least mercury is enclosed as the luminous substance in the luminous bulb, the amount of the enclosed mercury is  $300 \text{ mg/cm}^3$  or more based on the internal volume of the luminous

Art Unit: 2882

bulb, halogen is enclosed in the luminous bulb, and the lamp has a bulb wall load of 80 W/cm<sup>2</sup> or more.

Re claims 11 and 12: Hataoka discloses in claims 12,17 and 18, wherein in the luminous bulb, electrode rods are opposed to each other, each of the electrode rods is connected to a metal foil, and the metal foil is provided in the sealing portion and at least a portion of the metal foil is positioned in the second glass portion.

Re claims 15 and 16: Hataoka discloses in claims 6 and 20, a metal portion which comes into contact with the second glass portion and which is used for supply of power is provided in the sealing portion, the compressive stress is applied in at least the longitudinal direction of the sealing portion, the first glass portion contains 99 wt% or more of SiO<sub>2</sub>, and the second glass portion contains SiO<sub>2</sub> and at least one of 15 wt% or less of Al<sub>2</sub>O<sub>3</sub> and 4 wt% or less of B.

Re claims 17 and 18: Hataoka discloses in claims 1,11,16,18 and 23, the compressive stress in a region of the sealing portion corresponding to the second glass portion is from 10 kgf/cm<sup>2</sup> to 50 kgf/cm<sup>2</sup> inclusive when the sealing portion is measured by a sensitive color plate method utilizing the photoelastic effect.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Narita.

With respect to Claim 19: Narita discloses, in figure 3 and throughout the disclosure, a lamp with a reflector, comprising: a high pressure mercury lamp including a luminous bulb (10) with at least mercury enclosed therein (paragraph 16, lines 1-3) and a pair of sealing portions extending from the luminous bulb; and a reflector (20) for reflecting light emitted from the high pressure mercury lamp, wherein the reflector has a first opening located in a forward position of the reflector with respect to a light emission direction, the reflector is formed with a second opening into which one of the pair of sealing portions is inserted, and clearance between the one sealing portion and the second opening is substantially filled, the luminous bulb of the high pressure mercury lamp encloses mercury in an amount of  $270 \text{ mg/cm}^2$  or more based on the internal volume of the luminous bulb (paragraph 16, line 3), the high pressure mercury lamp has a bulb wall load of  $80 \text{ W/cm}^2$  or more (paragraph 16, line 2), when the pair of sealing portions are disposed to extend in the substantially horizontal direction, an air inlet is formed in a region of the reflector located below the sealing portion and in front of the luminous bulb with respect to the light emission direction, and an air vent is formed in a region of the reflector located below the sealing portion and in front of the luminous bulb

Art Unit: 2882

with respect to the light emission direction, and a duct for passing air is coupled to the air inlet and the air inlet and the air vent are arranged so that the air is introduced through the air inlet toward the high pressure mercury lamp and is ejected from the air vent (paragraph 55, lines 6-7).

With respect to claim 27: Narita discloses an image projection apparatus comprising the lamp of claim 19 with a reflector and an optical system using the lamp with a reflector as a light source (paragraph 2, lines 3-5).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-14, 17, 18, 25, 26, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi et al (WO 01/29862; hereinafter Horiuchi) in view of Narita, and further in view of Hataoka et al. (Japanese Patent Publication 2001-371365; hereinafter Hataoka).

With respect to Claims 1, 3, 4, and 28-30, Horiuchi et al. teach, in figure 10 and throughout the disclosure, a lamp with a reflector, comprising: a high pressure discharge lamp (10) including a luminous bulb with a luminous substance enclosed therein and a pair of sealing portions (20) extending from the luminous bulb; and a reflector (60) for reflecting light emitted from the high pressure discharge lamp, wherein

the reflector has a first opening located in a forward position of the reflector with respect to a light emission direction, the reflector is formed with a second opening into which one of the pair of sealing portions is inserted, and clearance between the one sealing portion and the second opening is substantially filled, the pair of sealing portions have portions to which a compression stress is applied.

However, Horiuchi et al. fail to teach or fairly suggest when the pair of sealing portions are disposed to extend in the substantially horizontal direction, a portion of the reflector is formed with an air inlet for introducing an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the luminous bulb, wherein the at least one of the pair of sealing portions includes a first glass portion extending from the luminous bulb and a second glass portion provided in at least a portion of the inside of the first glass portion, and wherein the angle at which the air inlet passes through the reflector is tilted with respect to the vertical direction so that the air inlet introduces air flow striking against the upper portion of the luminous bulb and then coming in to the lower portion of the luminous bulb.

Narita discloses, in figure 3 and throughout the disclosure, a lamp wherein part of a region of a reflector located below the sealing portion is formed with an air inlet located below the sealing portion, tilted at an angle with respect to the vertical direction where said inlet passes through reflector, for introducing an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the luminous bulb, wherein a duct for passing air is coupled to the air inlet (paragraph 55, lines 6-7).



It would have been obvious to one of ordinary skill in the art at the time of the invention to use the air inlet system of Narita in the apparatus of Horiuchi et al. to allow air flow in the lamp to cool the bulb.

Further with respect to Claims 1, 3, and 4, Hataoka et al. teach the at least one of the pair of sealing portions extending substantially horizontally (Figure 1), includes a first glass portion (2) extending from the luminous bulb and a second glass portion (7) provided in at least a portion of the inside of the first glass portion (Figure 1), to provide a strain boundary region between the two glass portions, increasing strength against pressure to protect the enclosed mercury (Column 2, Lines 3-13 and 35-38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the second glass portion of Hataoka et al. in the apparatus of Horiuchi et al. and Narita, to increase strength of the lamp and prevent breakage.

With respect to Claims 2, 7, 8, 9, and 10, Horiuchi discloses wherein at least mercury is enclosed as the luminous substance in the luminous bulb, the amount of the enclosed mercury is  $300 \text{ mg/cm}^3$  or more based on the internal volume of the luminous bulb, halogen is enclosed in the luminous bulb, and the lamp has a bulb wall load of  $80 \text{ W/cm}^2$  or more (page 21, line 5).

With respect to Claims 11 and 12, Horiuchi discloses, in figures 8a and 11 and throughout the disclosure, in the luminous bulb, electrode rods (12) are opposed to each other, each of the electrode rods is connected to a metal foil (24), and the metal foil is provided in the sealing portion and at least a portion of the metal foil is positioned in the second glass portion.

With respect to Claims 13 and 14, Horiuchi et al. and Narita teach all the limitations as shown above.

However, they fail to teach or fairly suggest a coil at least the surface of which contains at least one metal selected from the group consisting of Pt, Ir, Rh, Ru and Re is wound around at least part of a portion of the electrode rod embedded in the sealing portion.

Hataoka et al. disclose, in figure 26 and throughout the disclosure, a coil (30) at least the surface of which contains at least one metal selected from the group consisting of Pt, Ir, Rh, Ru and Re is wound around at least part of a portion of the electrode rod embedded in the sealing portion preventing small cracks from occurring near the electrode at the sealing portion to improve strength against the pressure of the lamp (Column 6, Lines 35-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the coil disclosed by Hataoka et al. within the lamp taught by Horiuchi et al. and Narita to prevent small cracks from occurring near the electrode at the sealing portion due to pressure.

With respect to Claims 17 and 18, Horiuchi discloses the compressive stress in a region of the sealing portion corresponding to the second glass portion is from 10 kgf/cm<sup>2</sup> to 50 kgf/cm<sup>2</sup> inclusive when the sealing portion (page 28, lines 11-12).

The Examiner notes that the method of finding the compressive stress, specifically the sensitive color plate method utilizing the photoelastic effect, does not have any patentable weight, rather only that the compressive stress is present.

With respect to Claims 25 and 26, Horiuchi discloses an image projection apparatus comprising the lamp with reflector of claims 1 and 3; and an optical system using the lamp with a reflector as a light source (page 1, lines 3-6).

Claims 5, 6, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi et al., Narita, and Hataoka et al., as applied to claims 1 and 3 above, and further in view of Pitkjann (US Patent 3,688,149).

Horiuchi et al., Hataoka et al., and Narita teach all the limitations as shown above.

However, they fail to teach or fairly suggest a concave lens attached to the front of the first opening of the reflector.

Pitkjann teaches, in figure 4 and throughout the disclosure, a concave lens attached to the front portion of a reflector within a lamp.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Horiuchi and Narita with a concave lens because the concave lens better focuses the light emitted by the lamp (Pitkjann; column 2, lines 16-19).

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horiuchi et al., Narita, and Hataoka et al. as applied to claims 1 and 3 above, and further in view of Okamoto et al. (US Patent 6,919,686; hereinafter Okamoto).

Horiuchi et al., Narita, and Hataoka et al. teach all the limitations as shown above.

However, they fail to teach or fairly suggest a trigger line wound around at least one of the pair of sealing portions.

Okamoto discloses, in figure 2a and throughout the disclosure, a trigger line wound around one sealing portion of a discharge lamp.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lamp disclosed by Horiuchi et al., Narita, and Hataoka et al., to include a trigger line because it aids in starting the discharge within the lamp, thereby producing light emission faster.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Narita as applied to claim 19 above, and further in view of Okamoto.

Narita teaches all the limitations as shown above.

However, Narita fails to teach or fairly suggest a trigger line wound around at least one of the pair of sealing portions.

Okamoto discloses, in figure 2a and throughout the disclosure, a trigger line wound around one sealing portion of a discharge lamp to aid in starting the discharge

within the lamp with shorter duration of voltage application and without requiring a hermetically sealed arrangement (Column 9, Lines 10-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lamp disclosed by Narita to include a trigger line to producing light emission faster, with less energy consumption, and in an inexpensive, reliable device, as taught by Okamoto.

### ***Response to Arguments***

Applicant's arguments filed 18 April 2006 have been fully considered but they are not persuasive.

With respect to the Narita reference in the above rejections, both prior art and double patenting, Applicant asserts that the air flow of Narita is in a different direction than that of the present invention, and that air inlet and air vent openings are in the opposite configuration to the present invention with respect to the upper and lower surfaces of a reflector. Examiner respectfully disagrees.

As the invention of both Narita and the present invention is symmetrical with respect to a horizontal axis in the figures, the "upper" and "lower" portions referred to in the figures are interchangeable, depending only on the perspective of the observer and not to any structural differences in the surfaces, *i.e.* if you rotate the device of Narita by 180 degrees with respect to a horizontal axis in the figure, the upper portion becomes the lower and vice versa, without any changes to the structure of the device. Additionally, the direction of the air flow is interchangeable in the same manner, as all

surfaces of the inner bulb and inner reflector surfaces are touched by the air stream in the manner required by the claim.

With respect to the Horiuchi et al. reference in the above rejections, both prior art and double patenting, Applicant asserts that Horiuchi et al. does not teach a second glass portion provided in at least a portion of the inside of a first glass portion, and that Narita does not remedy this deficiency. Examiner has considered this argument, but it is now moot, as the amended claims have been rejected including the Hataoka et al. reference used above, wherein Hataoka teaches the second glass portion (7) for added strength to the lamp.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM  
6/22/06

*Handwritten signature*  
6/22/06

*Handwritten signature of Edward J. Glick*  
EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER